TECHNICAL SPECIFICATION

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Cards and security devices for personal identification — Communication between contactless readers and fare media used in public transport —

Part 2: Test plan for ISO/IEC 14443 (all parts)

Cartes et dispositifs de sécurité pour l'identification personnelle — Communication entre terminaux et objets sans contact utilisés en transport public —

Partie 2: Plan de test pour l'ISO/IEC 14443 (toutes les parties)

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see http://patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Technical Committee ISO/IEC JTC 1, *Information technology, Information technology,* Subcommittee SC 17*, Cards and security devices for personal identification*.

A list of all parts in the ISO/IEC TS 24192 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

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Introduction

This test plan represents a necessary step in a process designed to ensure contactless communications interoperability between fare management system terminals and any fare media liable to be accepted by them. The end-purpose of this document is to provide the test conformance plan that needs to be performed to ensure compliancy of fare management system terminals and any fare media in accordance with ISO/IEC TS 24192-1.

This test plan is not designed to repeat or duplicate the referenced specifications and associated test method, essentially ISO/IEC 14443 (all parts) and ISO/IEC 10373-6, but to list the test conditions to be performed in addition to the ones already described in the ISO/IEC 10373-6 and to define their testing and use conditions.

This document comes as a complement to the technical requirements expressed in ISO/IEC TS 24192-1, for ensuring contactless communication interoperability between public transport (PT) devices or between PT devices compliant to ISO/IEC TS 24192-1 and NFC mobiles devices compliant to NFC Forum specifications.

The list of test conditions applicable to the PT device under test is conditioned by the information conformance statement (ICS) declaration made by the device manufacturer. For each test case, the test conditions are clearly specified in order to determine the pertinence to run or not the test case in accordance with the device capabilities or in accordance with the device manufacturer's choice.

In order to facilitate the test report issuance, a test report template is included in Annex A.

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Cards and security devices for personal identification — Communication between contactless readers and fare media used in public transport —

Part 2: Test plan for ISO/IEC 14443 (all parts)

1 Scope

This document lists all the test conditions to be performed on a PT reader or a PT object in order to ensure that all the requirements specified in ISO/IEC TS 24192-1 are met for the PT device under test.

This document applies to PT devices only:

— PT readers which are contactless fare management system terminals acting as a PCD contactless reader based on ISO/IEC 14443 (all parts);

— PT objects which are contactless fare media acting as a PICC contactless object based on ISO/IEC 14443 (all parts).

This document applies solely to the contactless communication layers described in ISO/IEC 14443 (all parts). Application-to-application exchanges executed once contactless communication has been established at RF level fall outside the scope of this document. However, a test application is used to make end-to-end transactions during tests on the RF communication layer.

This document does not duplicate the contents of ISO/IEC 14443 (all parts) or ISO/IEC 10373-6. It makes reference to the ISO/IEC 10373-6 applicable test methods, specifies the test conditions to be used and describes the additional specific test conditions that can be run.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC/TS 24192-1:2021, *Cards and security devices for personal identification — Communication between contactless readers and fare media used in public transport — Part 1: Implementation requirements for ISO/IEC 14443 (all parts)*

ISO/IEC 10373-6:2020, *Cards and security devices for personal identification — Test methods — Part 6: Contactless proximity objects*

ISO/IEC 14443-1:2018, *Cards and security devices for personal identification — Contactless proximity objects — Part 1: Physical characteristics*

ISO/IEC 14443-2:2020, *Cards and security devices for personal identification — Contactless proximity objects — Part 2: Radio frequency power and signal interface*

ISO/IEC 14443-3:2018, *Cards and security devices for personal identification — Contactless proximity objects — Part 3: Initialization and anticollision*

ISO/IEC 14443-4, *Cards and security devices for personal identification — Contactless proximity objects — Part 4: Transmission protocol*

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC TS 24192-1, ISO/IEC 14443-1, ISO/IEC 14443-2, ISO/IEC 14443-3, ISO/IEC 14443-4 and ISO/IEC 10373-6 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Symbols and abbreviated terms

For the purposes of this document, the symbols and abbreviated terms given in ISO/IEC TS 24192-1, ISO/IEC 14443-1, ISO/IEC 14443-2, ISO/IEC 14443-3, ISO/IEC 14443-4 and ISO/IEC 10373-6 apply.

5 Description of the test environment

5.1 Test bench

The test bench shall conform to the specifications defined in ISO/IEC 10373-6:2020, Clause 5.

5.2 Tolerances applicable to ambient-environment tests

The ambient temperature and relative humidity shall conform to the specifications defined in ISO/IEC 10373-6:2020, 4.1. The tolerance for minimum and maximum temperatures is ±3 °C.

5.3 Test conditions for PCD

Unless otherwise specified:

— test positions and References PICCs as specified in ISO/IEC TS 24192-1:2021, 8.2 shall be used;

— the values defined in ISO/IEC 10373-6:2020, Table 4 shall be used to adjust PCD-test-apparatus parameters.

5.4 Test conditions for PICC

Unless otherwise specified:

— the PICC shall be tested with a field strength of H_{min}, 2 A/m, 2,5 A/m, 3,5 A/m, 4,5 A/m, 6 A/m and H_{max};

— the values defined in ISO/IEC 10373-6:2020, Table 7 shall be used to adjust PICC-test-apparatus parameters.

5.5 Positional tolerance

The positional tolerance shall be better than ±1 mm.

5.6 Admissible setup tolerances

Setup tolerances specified in ISO/IEC 10373-6:2020, 4.3 shall be used.

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